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Changes in California public higher education policy by the legislature in 1960 and the Regents of the University of California in 1966 are incorporated in new criteria for the establishment of new campuses. Criteria are based upon three methods of grouping campus facilities: high, medium, and low density. All new campuses are to be general institutions offering undergraduate, graduate, and professional programs with a growth rate per campus of 500-1,000 students per year to a maximum of 15,000 to 27,500 students. Major planning classifications are concerned with site evaluation and campus development. Criteria for site evaluation include land use, traffic circulation, university impact upon the community, utilities, climate and topography, availability and cost. Criteria for general development include campus population mixes and ratios and basic area requirements expressed in square feet, ratios and acreages for instructional facilities, housing, parking, athletics, research, utilities, recreation, and reserve lands. Tables of specific square foot and acreage standards by type of facility are included. (RLP)

DRAFT

UNIVERSITY OF CALIFORNIA

CRITERIA AND STANDARDS

FOR

NEW CAMPUS LOCATION AND SITE SELECTION

AUGUST 1966

FOREWORD

This document, University of California: Criteria and standards for New Campus Location and Site Selection, dated August 1966, has been prepared by the Bechtel Corporation, with consultation by staff of the University (Office of the President - Physical Planning and Construction). Although written as part of Bechtel's contract with the University for study and recommendation for possible new campus sites in San Francisco and the North Bay area, it is intended to have general, statewide applicability.

This report thus replaces a previous document of similar purposes prepared in January 1958, and reflects major changes in public higher education policy since that date, such as the Master Plan for Higher Education (Donahoe Act) of 1960 and the report, Plan for Growth of the University to 1976 and Beyond, approved in principle by The Regents in February 1966. The last-named report suggests the possible establishment of as many as five additional general campuses of the University in various parts of the state and under a wide variety of environmental conditions during the 1970's and 1980's; it is to this effort that this current "Criteria" report can hopefully provide some basic direction.

UNIVERSITY OF CALIFORNIA
CRITERIA AND STANDARDS
FOR
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I. HIGHER EDUCATION CONSIDERATIONS

A. HIGHER EDUCATION POLICY

The 1960 Master Plan for Higher Education sets forth the function of the public junior colleges, California State Colleges, and the University of California within the state's tripartite system as follows:

> ...public junior colleges shall offer instruction through but not beyond the 13th and 14th grade level, including but not limited to one or more of the following: (a) standard collegiate courses for transfer to higher institutions; (b) vocational-technical fields leading to employment, and (c) general or liberal arts courses. Studies in each field may lead to the Associate in Arts or Associate in Science degree...
>
> The state colleges shall have as their primary function the provision of instruction in the liberal arts and sciences and in professions and applied fields which require more than two years of collegiate education, and teacher education, both for undergraduate students and graduate students through the master's degree. The doctoral degree may be awarded jointly with the University of California, as hereinafter provided. Faculty research, using facilities provided for and consistent with the primary function of the state colleges, is authorized...
>
> The University shall provide instruction in the liberal arts and sciences, and in the professions, including teacher education, and shall have exclusive jurisdiction over training for the professions (including but not by way of limitation) dentistry, law, medicine, veterinary medicine, and graduate architecture. The University shall have the sole authority in public higher education to award the doctor's degree in all fields of learning, except that it may agree with the state colleges to award joint doctoral degrees in selected fields. The University shall be the primary state-supported academic agency for research, and The Regents shall make reasonable provision for the use of its library and research facilities by qualified members of the faculties of other higher educational institutions, public and private.

The 1956 study of The Need for Additional Centers of Public Higher Education in California stated the following regarding the relationship of the University and other public institutions to existing private educational facilities:

> Extention of publicly supported institutions to the degree that the continued operation of private ones long in existence and seemingly serving the community well is jeopardized, is not in the public interest.

The preceding quotations have not been modified, and remain as State of California and University policy. In addition the Board of Regents has approved the following statement of policy:

> Relationship to Other Institutions of Higher Learning
>
> Since each campus of higher education is a cultural center having a distinctive character and drawing on the resources of the surrounding community to a considerable extent, it is highly desirable that new centers be located beyond the area of influence of each other or of existing centers. It is also advantageous to distribute the educational opportunities and cultural values of such centers among the people. Each University campus should be sufficiently separated from a private university, state college or a junior college to preclude undesirable overlapping demands on the immediate community. Adherence to this principle should help to avoid destructive competition with existing private institutions.

The 1966 Plan for the Growth of the University to 1976 and Beyond set forth the following proposals as a result of extensive discussions within the University:

1. All campuses will be developed as general campuses offering undergraduate liberal arts instruction, as well as graduate and professional programs,

2. Appropriate planning limits will be established for all campuses. The Master Plan recommended that 27,500 be recognized as an upper planning limit for any general campus of the University. All campuses will be planned ultimately to achieve an average fall-winter-spring enrollment within the approximate range of 15,000 to 27,500 students, including any students enrolled in medical and health sciences.

3. No University campus will be expanded at a rate which will imperil academic standards. Growth must be anticipated by academic planning, recruitment of faculty and staff, construction of buildings, and acquisition of libraries and other research facilities. Planned rates of growth must allow for such preparation. Redirection of students among the several campuses will be necessary to maintain the desired controlled growth rates for each campus. It is now considered highly desirable--

   (a) that growth rates fall in the range of 500-1000 students per year until maximum size is reached;

   (b) that administrative redirection of students to any one campus should not be so great as to impair the effectiveness of that campus; and

   (c) that the too rapid cessation of growth, as a campus approaches its maximum size, should be avoided as being at least as disadvantageous as too rapid acceleration of growth.

4. The quality of instruction and of programs throughout the University must be maintained and improved wherever possible. To help achieve this goal the "instructional work load" per faculty member on the several campuses must be held to a reasonable maximum. The instructional work load now at Berkeley should be the maximum instructional work load on any fully mature campus within the University.

5. Year-round operation will be developed on the basis of a summer enrollment estimated to reach eventually 40 percent of the fall quarter enrollment for the University as a whole.

6. New campuses will be established in time to provide for students who cannot be accommodated on the existing campuses without unwise growth rates or unduly large administrative redirection to any of these campuses. The optimum "lead-time" interval between authorization and admission of the first student is six to ten years. The four-year period suggested in the 1960 Plan has proved to be too short a time except in

an emergency and it should be realized that "lead-time" will vary with the location of the campus. It is preferable to start one new campus at a time, rather than two or three simultaneously.

7. Separate University-wide studies of professional instruction and research, of University Extension, and of the developing role of postdoctoral students are needed.

8. With the growth of the University and the expansion of knowledge, specialization by campus in subject matter, instructional programs, in library collections, and in research projects will become correspondingly more important.

9. The costs of University expansion and the state's ability to support such expansion should be the subject of continuing careful study. The University should also continue to consider all reasonable means of reducing costs without sacrificing quality.

B. CHARACTERISTICS OF THE UNIVERSITY

The University of California has no district boundaries, nor does it serve only a portion of the state; rather the University functions as a system, serving the state as a whole, and drawing from all eligible students within the state. To an increasing extent the system also draws from a national and international reservoir of students, particularly at graduate levels. The University's statewide role emphasizes its need to be well related to all forms of transportation, so that the campus may be readily accessible to cultural, educational, and other intellectual resources and to reasonably priced housing for students, faculty, and staff.

By providing organically complex and closely inter-related facilities for teaching, research, and public service, the university campus virtually becomes a city within itself. Whatever the university's internal complexity, it is nevertheless dependent upon the surrounding community for a part of its support requirements. Because of the tendency for a close relationship between the university and the surrounding community, it is in their best interests to share in the regulation of community development.

The Board of Regents, in October of 1965, adopted the following policy regarding campus-community development:

> WHEREAS, The Regents of the University of California have adopted and maintain for each campus a Long Range Development Plan, as a guide to orderly development; and
>
> WHEREAS, every effort is being made to develop campuses of academic distinction and physical beauty; and
>
> WHEREAS, each campus and its surrounding community are highly interdependent with respect to housing, traffic, commercial services, community facilities and environmental design; and
>
> WHEREAS, the success of the University's efforts is greatly affected by the compatibility of the community development;
>
> NOW THEREFORE, The Regents declare as policy an objective to secure the development of each campus-community to the highest and best standards of contemporary planning and design responsive to and compatible with unique campus requirements.
>
> ...That in implementation of the above, the administration requests that appropriate community authorities strive vigorously and continuously for the development of a distinctive community in the environs of each campus compatible with the requirements of that campus.

II. ASSUMPTIONS

The assumptions below are either stated directly or implicitly in the Plan for Growth of the University to 1976 and Beyond, or are derived from recent University experience.

A. Population growth and student enrollment trends indicate the need to plan additional facilities to supplement the University's existing campuses.

B. All new University campuses shall be developed as general campuses.

C. Each new campus should reach an eminence and distinction approaching the best in the University system as soon as possible after opening. The new campus should have a unique personality characterized by its own special organization having due respect for the best traditions of existing campuses.

D. A superior faculty and student body are essential to distinction.

E. Nation-wide expansion of institutions of higher education has resulted in increasingly keen competition for faculty.

F. All forms of campus and community amenities aid in attracting and holding an able faculty.

G. A student enrollment of from 15,000 to 25,000 is a desirable range.

H. An eventual enrollment of 15,000 students could generate a university-related community of 45,000 to 60,000 people, and an enrollment of 25,000 students a community of 75,000 to 100,000 people, including students, faculty, staff, and their families, plus associated supporting population.

I. On-or near-campus housing must be provided in order to support an enrollment of students away from home, thereby offering enriched educational opportunities for all.

J. If housing in the vicinity of a selected site is limited, then larger amounts of on-campus housing must be provided.

K. The accessibility of a university campus to potential students will have an important bearing on the students' ability to commute;

therefore excellent highway-freeway access and transit access are imperative.

L. Uncertainty respecting the details of our educational, social, and technological future requires a campus plan and a physical plant that can be used to accommodate new developments with minimum cost and disruption.

M. Proper control and development of lands surrounding the campus are of direct and important value to both the university and the community. The undesirable effects of deteriorating communities surrounding several existing universities, or escalating land values at others, points to the need for active university participation in land-use and housing market controls over a considerable area around the basic core.

III. DEFINITION OF TERMS

A. GENERAL CAMPUS

An administrative unit of the University of California offering a broad range of liberal arts and sciences instruction, and including graduate and professional programs, as well as research and public service programs.

B. URBAN SITE

A location in close proximity to an established metropolitan central business district. An urban site is characterized more specifically by nearby concentrations of one or more of the following: intensive commercial, residential, governmental, office, or cultural uses.

C. SUBURBAN SITE

A location presently characterized by nearby uses, or potential uses, of moderate or low intensity, and by a peripheral location with respect to a metropolitan central business district.

D. CAMPUS CORE

The principal concentration of physical facilities in which the majority of campus teaching. research, and cultural activities are located. The campus core normally includes academic, administrative, library, research, and service space.

E. COMMUNITY

The zone of physical, economic and social influence exerted on or by the University, around the campus core.

IV. SITE EVALUATION CRITERIA

Both tangible and intangible site qualities bear upon each site's full potential. Tangible qualities are those that may be measured in quantitative terms such as circulation, slope, climatology, and utility service, while intangible qualities are those that, by their nature, may be measured only on a qualitative scale. Intangible items include such factors as community environment and aesthetic value of the site. It is undesirable to develop rigid criteria for site evaluation because of the danger of establishing standards that a priori mold a site to preconceived forms. Criteria must have sufficient flexibility to allow evaluation of each site to its own best advantage. A site's unique qualities should be recognized, not penalized, by criteria.

Although it is difficult to reach unanimous agreement as to weight or emphasis, it is possible to outline general guidelines for analyzing these factors.

The site evaluation considerations described herein are to illustrate the general method by which potential new campus sites may be evaluated, and to specify the criteria and standards to be used. No attempt should be made at this time to assign an order of importance to the criteria; such ranking should be done only in respect to specific potential sites in order to avoid the pitfalls of rigidity and arbitrariness.

The major site evaluation criteria that should be considered are set forth below:

A. SITE APPEAL

California is endowed with many areas of great natural beauty. It is fitting that over the years the best of these be preserved and devoted to public use. It is appropriate that the University develop new campuses on inspiring sites where the quality of the University's physical plant may be matched by its setting. In both the urban and the suburban campuses unique character may be developed from natural plantings, and from vistas to mountains, ocean, stream, lake or bay. Additionally, the urban campus may benefit from a strong relationship with elements of the man-made cityscape. Potential urban sites must be evaluated not only in terms of the sites themselves, but also in light of their relationships to surrounding uses and the compatibility of these uses with probable university programs and physical development.

B. PRESENT AND POTENTIAL LAND USE

Analysis of potential sites includes evaluation of existing and probable future land use patterns. The university is inextricably a part of the community and the region; the university and its environment are mutually complementary, their strengths reinforcing each other and their weaknesses detracting. Significant factors affecting potential campus sites include city, county, regional and state master plans, including plans for land use, zoning, highways and freeways, mass transit, parks and recreation, water resources, pollution control, and similar subjects of widespread community import.

C. COMMUNITY DEVELOPMENT, GUIDANCE, AND CONTROL

The University's concern for a sound environment cannot end at the campus' edge. Experience with University campuses gives evidence that land development speculators invariably wait on the sidelines, and that in many cases their uncontrolled activities are incompatible with a good environment. It is important that methods of land use control for surrounding areas be established at the outset, and that necessary agreements be executed simultaneously with land acquisition.

The public attitude toward the orderly development of the community, and the effectiveness of existing or proposed master plans, workable programs for community improvement, and zoning and subdivision ordinances are important considerations for gauging the quality of local planning activities.

D. PUBLIC SUPPORT

It is in the University's best interests to be assured of public support. Such support is manifested in numerous ways: overt expressions of enthusiasm by local governments, chambers of commerce, civic groups, and individuals; assistance in the form of plan and ordinance amendments and agreement for provision of initial services, such as roads, utilities, fire protection, or annexation; and offers of land at reduced or no cost. These attitudes can influence critically the initial locational decision and the continuing success of the new campus.

E. CIRCULATION

It is essential that university sites be accessible by existing or

proposed freeways and expressways and that sufficient major arterial roads exist or be proposed to meet the needs of the campus. Accessibility by mass transit is desirable. Each site must be evaluated in terms of its own unique circulation requirements. These are dependent upon factors such as the availability of faculty, staff, and student housing in the surrounding community and the amount of on-campus housing provided. Additional factors are the relationship of the site to a metropolitan area and to cultural and recreational facilities, the extent of commuter parking provided, and the availability and cost of existing and proposed transportation. In keeping with the University's statewide role, and to meet the general requirements of students, faculty and staff, the site must be within reasonable commuting distance of major bus, rail and air transport centers.

F. DEMOGRAPHY

The University is a statewide institution and will draw eligible students from throughout the state, as well as from out-of-state. Potential sites should be compared in terms of their locational relationship to the region's population centers. This factor influences the population that will be directly served, and establishes the magnitude of resident housing and commuter requirements.

The impact of a university campus of 15,000 to 25,000 students plus the university community will have a significant long-range influence on local demographic projections, particularly if the campus is located in an as-yet undeveloped area.

G. UNIVERSITY IMPACT ON THE COMMUNITY

Potential sites must be evaluated on the basis of the physical factors which affect their utility as university campuses and in terms of their effect on the surrounding community. The University's impact on the community will take several forms: demand for employment and housing created directly by the University; secondary markets created by the University community; and increased social and cultural activities.

In addition, the University will also have an impact on a community's educational, cultural, and recreational facilities, and could cause changes to tax bases, real estate values, and patterns of land use and circulation.

Proximity to an existing junior or state college or private higher education institution need not automatically detract from a potential University site; the possibility of cooperative or complementary programs and shared facilities should be explored if it would permit an otherwise outstanding site to remain in consideration.

Dramatic concepts of community development can be demonstrated in connection with new urban and suburban campus sites. The impact of the university's population combined with its controlled and phased development provides an unparalleled opportunity to develop a new community around a campus.

H. COMMUNITY FACILITIES

Numerous community facilities within reasonable proximity of potential campus sites are necessary to support the university. Among these facilities are shopping areas, schools, hospitals, churches, parks and recreation areas, cultural and governmental centers.

I. ENVIRONMENT

Insofar as possible, potential sites should be free of environmental disturbances such as excessive noise, odor, smog, traffic congestion, blighted surroundings, heavy industrial uses, airways, airports, fire and flood hazards, and similar nuisances.

J. UTILITIES

The availability of utility services including water, sewer, power, gas, telephone, and storm drainage must be determined for each site. In the event of deficiencies, adequate alternates must be analyzed. Illustrative basic requirements for the University are tabulated in Appendix A.

K. CLIMATE

Climatic conditions vary widely in different parts of California, and wide variations in microclimate may be experienced within short distances. It is important that potential sites be carefully evaluated as to their characteristic microclimates. Among desirable climatological factors are moderate temperature with few days of extreme maximum and minimum, sufficient rainfall to promote landscaping growth, moderate prevailing winds, sufficient sunshine, and minimal fog.

L. TOPOGRAPHY

The shape and topography of potential sites should lend themselves to flexibility in site planning and construction. It is not essential that the land be flat, and indeed some rise and fall to the land, or general sloping, is desirable for aesthetic effect as well as drainage. Although a site may consist of several parcels of property, it is desirable that its boundaries have reasonable geometric proportions, permitting optimum campus development.

Site area requirements must be stated in terms of the quantity of land that is developable within reasonable costs, consistent with the value of the land. For example, in urban areas where high land cost is an important factor, it is desirable to develop the site to the maximum possible extent; sloping land could be developed by means of intense, vertical construction and the provision of special pedestrian circulation systems. Similarly, in less expensive relatively open sites available in fringe and rural sloping lands, it would be possible to develop clusters of buildings which would take advantage of the available developable land, leaving land with excessive slope as community open space.

Slopes of potential sites within suburban areas should average no more than six percent for developable portions of the sites. Slopes of potential sites within urban areas could average higher than six percent, on the assumption that development would of necessity be highly intense, and that problems of internal vertical and horizontal circulation may be resolved through architectural solutions.

M. GEOLOGY AND SEISMOLOGY

Potential sites must have foundation and soil conditions adequate for development of campus structures. The soil must have good drainage and should be able to support growth of plant material necessary for campus landscaping.

Active faults, rift zones, and areas of potential landslides and subsidence should be avoided; however, there is the possibility of isolating these areas in undeveloped or natural portions of the site. Consideration should also be given to the seismic activity in the site area in regard to frequency and magnitude.

N. SITE AVAILABILITY

Potential sites should be free and clear of easements, encumbrances, and encroachments, and the site's mineral and water

rights should be available to the University. The time required for site acquisition should be reasonable in order to meet the University's desired new campus opening date. A reasonable lead time between authorization of a campus and admission of the first students is approximately six years. This lead time may be influenced by the numbers of individual property owners in the site area, their willingness to sell or donate their land to the University, and the speed with which local public authorities can reach necessary understandings with the University. Phased release of property in conformance with University development plans might be considered, particularly if urban renewal is used in connection with site acquisition for an urban campus.

O. SITE COSTS

Potential sites should be thoroughly evaluated in terms of the total costs to the University. These costs include the basic land cost, plus the estimated costs to the University of site preparation, special foundations, erosion and flood control facilities, access roads, utility extensions and services beyond those supplied by others, and significant site occupant relocation costs. It is possible that donated land may prove to involve costs to the University in excess of those required for land that must be purchased.

There are situations where it would benefit the University to consider the application of local, state, and federal assistance programs to a proposed site. Among these programs are advance land acquisition, urban renewal, highway assistance, beautification, open space purchase, community facility planning and assistance, and low-interest housing financing.

V. DEVELOPMENT STANDARDS

It is imperative that each potential general campus site be examined to its own best advantage so that site judgments on the basis of highly detailed preconceived standards may be reduced to a minimum. Were such detailed, rigid standards to be used, there is a danger that they would be biased toward a particular type of campus. Such standards could cause the elimination of otherwise usable sites, or could result in the selection of inferior sites.

To reduce this possibility, standards have been developed which provide ranges of acceptable intensities. Use of these enables comparison of campuses of disparate size, topography, and quantity of developable land, as well as different land values and site improvement costs. The development standards allow for 15,000 to 25,000 full time equivalent (FTE) students per campus, and a range of building intensities that permit development on urban sites of limited area, as well as suburban sites.

The development standards are set forth below:

A. UNIVERSITY POPULATION

Following are numerical ranges of students, faculty, staff, and others directly associated with a general university campus, and their repsective ratios:

1. Student Population

In accordance with the Plan for Growth of the University to 1976 and Beyond, new campuses would have student enrollment ranges as indicated in Table One.

TABLE ONE

RANGE OF ENROLLMENT (FTE STUDENTS)

Campus Type	Low	Medium	High
General Campus	15,000	20,000	25,000

2. Student Mix

The assumed ratio of lower to upper to graduate division students is set forth in Table Two. The lower to upper division ratio is consistent with the 1966 Growth Plan as the lower division group will constitute no more than 40 percent of the total number of undergraduates. The percentages of married students are assumed to be 5 percent, 20 percent, and 50 percent of lower, upper, and graduate divisions respectively.

TABLE TWO

STUDENT MIX

Level	Percentage
Lower Division	24
Upper Division	36
Graduate Division	40

3. Student-Faculty Ratios

The 1966 Growth Plan states student-faculty ratios for weighted instructional work loads. These are shown in Table Three, and are intended for application to the University as a whole as rough guides for the allocation of resources:

TABLE THREE

STUDENT-FACULTY RATIOS

Level	Ratio
Lower Division	28:1
Upper Division	19:1
Graduate Division	8:1

4. Staff-Faculty Ratio

Based on the University's past experience, the number of nonacademic, administrative, and staff personnel in ratio to the total number of faculty is 3:1.

5. Miscellaneous Population

An allowance for visitors, extension students, and other persons may be calculated by computing ten percent of the total number of FTE students, faculty, and staff.

6. Total Population

The total University population is the sum of the FTE students and faculty, staff, and miscellaneous population.

B. BASIC AREA REQUIREMENTS FOR A GENERAL CAMPUS

The approximate floor and site area requirements for academic, administrative, library, research, service, residential, and parking functions are set forth below:

1. Campus Core Standards

These standards are basic to the determination of the required building floor area, the site area occupied by structures, and the approximate site area required for the campus core.

a. Campus Core Floor Area

Consistent with the 1957 Restudy standard allowances adjusted to the 1960 Master Plan, and in view of recent University planning experience, the overall floor area requirement for academic, administrative, library, research, and service space is shown in Table Four:

TABLE FOUR

CAMPUS CORE FLOOR AREA

Level	GSF/FTE Student
Lower Division	120
Upper Division	240
Graduate	480

b. Campus Core Building Intensities

Three closely related factors are used as standards to

determine the intensity of development for the campus core. These factors are Floor Area Ratio (FAR), Building Coverage, and Building Height. The floor area ratio is the ratio of a building's total gross square footage to the total area of its site. Building coverage refers to that portion of the site area covered by structures. Building height refers to the average total number of stories above and below finished grade of all structures built upon a site.

The importance of these factors is that, taken together, they form a coherent statement regarding the intensity of development which can occur on any given site. Thus, a development having a floor area ratio of 3:1 would contain buildings with a gross area three times the basic site area. If such a development were to be limited in coverage to 33 percent of the site, it would have an average building height of nine stories. These basic relationships may be expressed by the formula FAR=BH x BC, where FAR is the floor area ratio, BH is the average building height in stories, and BC is the building coverage expressed as a fraction of the site. Using this formula, a range of development intensities may be calculated covering a spectrum of development possibilities for any site, from low intensity with low structures to high intensity with high-rise structures, and any combination of these variations as well.

Table Five presents a series of development intensities ranging from low, as at the University's campuses at Davis, Irvine, Los Angeles, and Berkeley, to high intensity which approaches certain eastern institutions. The highest intensity recommended, a floor area ratio of 3:1, is only half the 6:1 ratio currently used as planning standards by Columbia University and New York University. Building coverage standards herein range from 25 percent to 33 percent of the site area, and are based upon architectural-planning considerations as well as recent University experience.

TABLE FIVE

CAMPUS CORE BUILDING INTENSITY

Element	High	Medium	Low
Floor Area Ratio (FAR)	3.0	2.0	1.0
Building Coverage *	.33	.33	.25
Average Building Height	9	6	4

* All areas covered by academic, administrative, research, library, service, and parking structures but excluding pedestrian paths, covered walkways, access drives, surface parking, landscaping and recreational areas, and those portions of roof decks developed as open space which are directly accessible for pedestrian circulation or use.

c. Campus Core Site Area

The campus core site area in acres is calculated by dividing the campus core floor area in acres by the floor area ratio.

2. On-Campus Housing Standards

The amount and type of housing developed in association with any campus depends in large part on the character of the specific site under consideration. A variety of factors, such as available transportation, community housing pattern, and the campus's proposed student mix will influence housing requirements. It is reasonable to expect, however, that based on present University experience and policy, no less than 10 percent of the students at any campus will require housing on campus, and probably not more than 50 percent of the students will require on-campus housing as the campus and the surrounding community approach maturity. Depending upon specific sites, it may also be that in a campus's early years a higher than ultimately proposed proportion of University provided housing may be necessary until the surrounding community can develop sufficient resources to share the demand.

a. Percent Housed On Campus

Three intensities of on-campus housing are shown in

Table Six, indicating a low, medium, or high proportion of students housed. Ten percent of the married students' spouses are assumed to be enrolled at the University.

TABLE SIX

ON-CAMPUS HOUSING
(Percent of Students Housed)

Status		Low	Medium	High
Undergraduate	Single	10	25	50
Graduate	Single	10	25	50
Undergraduate	Married	10	25	50
Graduate	Married	10	25	50

b. On-Campus Housing Densities

Housing densities may vary from the relatively low figure of 20 families per net acre for married students where substantial quantities of land are available, to a high of 600 single students per net acre in areas of extremely high land value. Table Seven presents a range of high, medium, and low housing densities, arranged by enrollment level and marital status.

TABLE SEVEN

ON-CAMPUS HOUSING DENSITIES

Status	Students Per Net Acre		
	High	Medium	Low
Single Undergraduates	600	300	100
Single Graduates	400	200	70
Married Students	120*	45*	20*

* Expressed in dwelling units per net acre.

c. On-Campus Housing Site Area

The on-campus housing site area in acres is determined by dividing the number of students housed by the respective housing density factor:

3. Parking Standards

A strong relationship exists between parking and housing, transportation and enrollment. Parking is dependent upon these three factors, and due to its land-demanding nature campus site area requirements are substantially affected. In particular the availability of public transportation influences the parking requirements; a campus served by rapid transit, for example, needs fewer spaces than one lacking transit service.

a. Parking Allocation

Table Eight relates parking requirements to the availability of rapid transit:

TABLE EIGHT

TOTAL GENERAL CAMPUS PARKING ALLOCATION
(Measured in Spaces Per Student)

	Rapid Transit Availability		
	Good	Fair	Poor
Spaces/Student*	0.20	0.60	0.85

* Earlier studies suggested a ratio of 0.5 spaces per student as a figure that would yield total parking requirements for students (resident and commuter), faculty, non-academic staff, and visitors. Figures used in this table are best current estimates of general campus needs taking into account varying quality of alternative transit availability.

b. Parking Space Area

Based on recent experience, 400 gross square feet per parking stall should be used as a standard. This gross figure includes allowances for the basic parking space as well as aisles, utility spaces, and appropriate landscaping. The parking area (in GSF) is determined by multiplying the total number of students times spaces per student by 400 GSF per parking space.

c. Parking Form

The type of parking development is directly related to factors of land value and availability. In urban situations, where highly restricted sites having high land values must be developed, virtually all parking should be decked or underground, or a combination of the two. At relatively restricted suburban sites, parking may be developed on surface lots, and concentrated partially in decked structures. Parking for suburban campuses, where a relatively large amount of low value land may be available, may take the form of landscaped and improved surface lots, although ultimate parking development may require some parking facilities in decked structures for reasons of convenience and aesthetics.

d. Parking Allocations and Site Area

Based on the above description of possible parking forms, the allocation ratios suggested in Table Nine are used to determine the parking area to be incorporated into the campus core and on-campus housing areas.

TABLE NINE

ALLOCATION RATIOS
PARKING AREA TO SITE AREA

Intensity	High	Medium	Low
Ratio (R)			
Campus Core, (R_c)	0.75	0.20	.05
On-Campus Housing, (R_h)	0.75	0.20	.05
Additional Parking Intensity, (R_i)	2.0	1.5	1.0

The area required for additional parking may then be determined by this formula:

$$A = \frac{T - [(C \times R_c) + (H \times R_h)]}{R_i}$$

Where:

1. A = Additional site area required, if any, for parking, acres.
2. T = Total parking area required, acres.
3. C = Campus core site area, acres.
4. R = Ratio of parking area to site area.
   - R_i = Ratio for additional parking intensity.
   - R_c = Ratio for campus core area parking.
   - R_h = Ratio for housing site area parking.
5. H = On-campus housing site area, acres.

C. OTHER SITE AREA ALLOWANCES

The criteria and standards discussed in the preceding sections define the minimum needs of the campus core, housing, and parking areas. Depending upon a precise academic program and the character of the site, additional facilities may be desirable. Selection of desirable site area allowances for specific uses is a matter of judgment. For the purposes of this criteria report, a range of standards is proposed, enabling the various uses to be more realistically applied to individual sites.

After the campus core, housing, and parking areas have been determined, remaining land should be evaluated in terms of the type and extent of site area allowances that might be desired. The allowances for facilities that could be developed on a site influence the site's overall rating.

The site area allowances are in no way commitments that such facilities or areas should be incorporated into a final campus plan, but serve to illustrate the potential for site development.

1. Athletic and Recreational Courts and Fields

Table Ten indicates land for intramural, recreational, and physical educational uses. Such activities could include any of the following, consistent with the available site area and community and regional recreation resources: archery, basketball, volleyball, tennis, swimming, baseball, softball, track, and football.

TABLE TEN

RECREATION LAND ALLOWANCE

	Low	Medium	High
GSF/FTE Student	40	80	140

2. Research Centers

Research centers similar to those operated by the University in cooperation with State, Federal and private programs may be a desirable addition. Table Eleven suggests a reasonable range for such facilities; it should be assumed that the research center FAR, coverage, and height factors are compatible with the campus core.

TABLE ELEVEN

RESEARCH CENTER ALLOWANCE
(Excluding Parking)

	Low	Medium	High
Floor Area (GSF)	200,000	400,000	600,000

3. Research-Development Areas

In addition to land set aside for research centers, it may be desirable to have research-development areas available for agricultural, engineering, or similar land-demanding facilities, as indicated by Table Twelve. Special research-development areas would tend to be on the edge of the campus, relatively isolated from the more intensively developed campus core uses, but well related to the technical disciplines that they would serve.

TABLE TWELVE

RESEARCH DEVELOPMENT ALLOWANCES

	Low	Medium	High
Site Area (Acres)	75	150	300

4. Medical Center

Varying from an allowance for a college of medicine to one for a combined medical center, teaching hospital, and health sciences facility, the allowances set forth in Table Thirteen are consistent with the range of planning standards currently used by the University.

TABLE THIRTEEN

MEDICAL CENTER ALLOWANCES
(Excluding Parking)

	Low	Medium	High
Floor Area (GSF)	1,000,000	2,000,000	3,000,000

5. Sports Facilities

In addition to land set aside for athletic and recreation courts and fields, it may be desirable to develop other sports facilities, including a sports arena, stadium, or golf course. Table Fourteen indicates allowances for sports facilities. The medium and high allowances include some provision for parking facilities serving these uses. Parking for facilities having a low land allowance is assumed to be primarily shared with nearby development.

TABLE FOURTEEN

SPORTS FACILITIES ALLOWANCES
(Acres)

Facility	Low	Medium	High
Golf Course	40*	120	160
Indoor Sports Arena	10	15	20
Stadium	20	50	150
Water Recreation		As Available	

* Par 3, Short Course.

6. Service and Utility Facilities

Table Fifteen indicates land required to support service and utility requirements, including facilities such as heating and

air-conditioning plants, incinerators, laundry, maintenance shops, storehouse, printing plant, commissary, and water and waste-water treatment plants. Application of this factor is dependent in part upon the extent and capacity of similar facilities in nearby communities.

TABLE FIFTEEN

SERVICE-UTILITY ALLOWANCES

	Low	Medium	High
Site Area (Acres)	15	20	25

7. Reserve Lands

Although allowances discussed in preceding sections should suffice without contingency, historical experience demonstrates that unforeseen growth often renders obsolete original land requirement concepts. Where suburban campus growth has been possible without acquisition of additional land, it has often been at the expense of land originally acquired for agricultural or field station purposes. At urban universities, additional development has been made through vertical growth or the acquisition of additional land on the open market or through urban renewal. Often the land acquired in this manner is separate from the campus core and obtained at a relatively high cost, resulting in a fragmented and inefficient plan.

Because of rapid development and urbanization, it is imperative that sites be adequate for the future in order to avoid the greater expense and disruption occasioned by subsequent piecemeal expansion into surrounding properties. A range of reserve allowances are shown in Table Sixteen. These allowances are a percentage of the sum of the campus core, on-campus housing, parking, and all other area allowances.

TABLE SIXTEEN

RESERVE LAND ALLOWANCE

Low	Medium	High
10%	25%	40%

VI. ILLUSTRATIVE SITE AREA ANALYSES

Table Seventeen presents a group of illustrative site area analyses, based upon the preceding criteria and standards. These illustrative analyses are computed at high, medium and low campus intensities, at enrollments of 15,000, 20,000 and 25,000 FTE students.

TABLE SEVENTEEN

ILLUSTRATIVE SITE AREA ANALYSES

(Based on "Criteria and Standards for New Campus Location and Site Selection, August 1966")

INTENSITY OF OVERALL CAMPUS DEVELOPMENT	HIGH	MEDIUM	LOW	HIGH	MEDIUM	LOW	HIGH	MEDIUM	LOW
I. UNIVERSITY POPULATION- FTE STUDENTS (Table One)	15,000	15,000	15,000	20,000	20,000	20,000	25,000	25,000	25,000
II. BASIC AREA REQUIREMENTS									
A. Campus Core Standards									
1. Building Intensities (Table Five)	High	Medium	Low	High	Medium	Low	High	Medium	Low
2. Site Area (Acres)	35	53	106	47	70	141	59	88	176
B. On-Campus Housing Standards									
1. Percent Students Housed (Table Six)	Low	Medium	High	Low	Medium	High	Low	Medium	High
2. Housing Densities (Table Seven)	High	Medium	Low	High	Medium	Low	High	Medium	Low
3. Housing Site Area (Acres)	5	31	156	7	42	208	9	52	260
C. Parking Standards									
1. Parking Allocation (Table Eight)	Low	Medium	High	Low	Medium	High	Low	Medium	High
2. Additional Parking Site Area (Acres)	None	44	104	None	59	139	None	73	173
SUB-TOTAL BASIC AREA (ACRES)	40	128	366	54	171	488	68	213	609
III. OTHER SITE AREA ALLOWANCES									
A. Athletic and Recreation Fields and Courts									
1. Allowance (Table Ten)	Low	Medium	High	Low	Medium	High	Low	Medium	High
2. Site Area (Acres)	14	28	48	18	37	64	23	46	80
B. Research Centers									
1. Allowance (Table Eleven)	None	Low	Medium	None	Medium	Medium	None	Medium	High
2. Site Area (Acres)	0	2	9	0	5	9	0	5	14
C. Research Development Area									
1. Allowance (Table Twelve)	None	Low	Medium	None	Medium	Medium	None	Medium	High
2. Site Area (Acres)	0	75	150	0	150	150	0	150	300
D. Medical Center									
1. Allowance (Table Thirteen)	None	Low	Medium	None	Medium	Medium	None	Medium	High
2. Site Area (Acres)	0	11	46	0	23	46	0	23	69
E. Sports Facilities									
1. Allowances (Table Fourteen)									
a. Golf	None	None	Low	None	Low	Low	None	Low	Medium
b. Sports Arena	None	None	Low	None	Low	Low	None	Low	Medium
c. Stadium	None	None	Low	None	Low	Low	None	Low	Medium
2. Site Area (Acres)	0	0	70	0	70	70	0	70	185
F. Service and Utility Facilities									
1. Allowance (Table Fifteen)	None	Low	Medium	None	Medium	Medium	None	Medium	High
2. Site Area (Acres)	0	15	20	0	20	20	0	20	25
SUB-TOTAL ALLOWANCES (ACRES)	14	131	343	18	305	359	23	314	673
SUB-TOTAL BASIC AREA AND ALLOWANCES (ACRES)	54	259	709	72	476	839	91	527	1282
G. Reserve Lands									
1. Allowance (Table Sixteen)	Low	Medium	High	Low	Medium	High	Low	Medium	High
2. Site Area (Acres)	5	65	284	7	119	336	9	132	513
IV. TOTAL CAMPUS SITE AREA (ACRES)	59	324	993	79	595	1175	100	659	1795

APPENDIX

APPENDIX A

UTILITY REQUIREMENTS

(This information is under development,
and will be included in the final report.)

APPENDIX B

ILLUSTRATIVE PARKING ALLOCATIONS AND SITE AREA CALCULATIONS
Based on Parking Standards (Pgs. 21-23) and Table Seventeen (Pg. 28)

INTENSITY OF OVERALL CAMPUS DEVELOPMENT	HIGH	MEDIUM	LOW
I. UNIVERSITY POPULATION - FTE STUDENTS	20,000	20,000	20,000
II. BASIC AREA REQUIREMENTS (TABLE SEVENTEEN)			
A. Campus Core Site Area, C (Acres)	47	70	141
B. On-Campus Housing Site Area, H (Acres)	7	42	208
C. Parking Standards			
1. Parking Allocation (Table Eight)	Low	Medium	High
a. Spaces/Student	0.20	0.60	0.85
b. Total Number of Spaces	4,000	12.000	17,000
c. Required Parking Area 400 GSF/Space, T (Acres)	37	110	156
2. Allocation Intensity (Table Nine)	High	Medium	Low
a. Allocation Ratios - Parking Area to Site Area, R			
1. Campus Core, R_c	.75	.20	.05
2. On-Campus Housing, R_h	.75	.20	.05
3. Additional Parking, R_i	2.0	1.5	1.0
b. Parking Area Allocations			
1. Campus Core Parking Area, $C \times R_c$ (Acres)	35	14	7
2. On-Campus Housing Parking Area, $H \times R_h$ (Acres)	5	8	10
3. Sub Total, $[(C \times R_c) + (H \times R_h)]$, (Acres)	40	22	17
3. Additional Parking Area			
a. Required Parking Area, T (Acres)	37	110	156
b. Allocated Parking Area, (Acres) $[(C \times R_c) + (H \times R_h)]$	40	22	17
c. Required Additional Parking Area, (Acres) $T - [(C \times R_c) + (H \times R_h)]$	None	88	139
4. Additional Parking Site Area, A (Acres) $A = \frac{T - [(C \times R_c) + (H \times R_h)]}{R_i}$	None	59	139

APPENDIX C

BACKGROUND INFORMATION

1. T. C. Holy, H. H. Semans, et.al. Site Evaluation Standards, "A Study of the Need for Additional Centers of Public Higher Education in California", Liaison Committee of the California State Board of Education and The Regents of the University of California, Sacramento: California State Department of Education, 1957.

2. C. D. Wheelock, R. J. Evans et.al. "University of California New Campus Location Criteria", Administrative Committee of The Regents of the University of California, January 1958.

3. T. R. McConnel, T. C. Holy & H. H. Semans, "A Restudy of the Needs of California in Higher Education", The Liaison Committee of The Regents of the University of California and the State Board of Education, University of California Press, Berkeley, 1955.

4. C. Kerr, "Plan for Growth of the University to 1976 and Beyond", University Bulletin Vol. 14, No. 26, Feb. 17, 1966.

5. A. G. Coons, K. Saxton et.al. "A Master Plan for Higher Education in California, 1960-1975", Liaison Committee of the State Board of Education and The Regents of the University of California, California State Department of Education, Sacramento, 1960.

6. "Space Standards and Estimating Guides", The University of California, Office of the Vice President - Finance, 1961.

7. "Unity and Diversity: The Academic Plan, 1965-1975, of the University of California", Committee on Educational Policy, Academic Senate of the University of California, Draft Copy, January 1965.